



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/928,566	08/13/2001	Yukihiro Matsukawa	1692-011111	7158

7590

07/06/2004

John W. McIlvaine, Esq.
700 Koppers Building
436 Seventh Avenue
Pittsburgh, PA 15219-1818

EXAMINER

HANSEN, COLBY M

ART UNIT

PAPER NUMBER

3682

DATE MAILED: 07/06/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/928,566

Applicant(s)

MATSUKAWA, YUKIHIRO

Examiner

Colby Hansen

Art Unit

3682

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 09 April 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 2 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) 3 and 4 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 August 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Drawings

The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, (1) a worm wheel assembled into a worm wheel shaft attached to a circular table and (2) the thickness dimension of said teeth gradually increasing in the direction of the rotation axis of a drive shaft, as claimed in claim 1, must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

Specification

The amendment filed 5/27/2004 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: further disclosing the multiple lead type worm for carrying out annular division of a circular table; and further disclosing a worm wheel assembled into a worm wheel shaft attached to a circular table.

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 2, and 5 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is unclear what is meant when the multiple lead type worm teeth are described to have a thickness dimension wherein the teeth gradually increase in the direction of the rotation axis of a drive shaft.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1, 2, and 5, as best understood, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kitagawa (US Pat. 5,188,004) in view of Falk (US Pat. 4,093,052), and further in view of Popov (US Pat. 4,047,449).

Kitagawa (US Pat. 5,188,004) discloses a dividing head comprising a circular table "a" wherein a worm wheel "e" is assembled into a worm wheel shaft that is attached (as broadly recited, the worm wheel shaft is fixturedly attached to the circular table via the interceding housing) to the circular table "a" utilizing a multiple lead type worm (fig. 1).

Art Unit: 3682

However, Kitagawa (US Pat. 5,188,004) does not disclose the worm bodies being adjustable or the worm teeth formed such that the thickness dimension of said teeth gradually increases in the direction of the rotation axis of a drive shaft.

Falk (US Pat. 4,093,052) discloses a hollow body 25;

a drive shaft 26 fitted into a hollow portion of said body, and an assembler 11, 12, 13, 14, 15 16, 27, 30 having an annular portion which is coaxial with said drive shaft to couple both by frictional engagement;

said assembler includes a cylinder 11, 12, 13, 14 which forms said annular portion, the cylinder being disposed between said body and said drive shaft, having a fluid reservoir in an interior of the cylinder, and being expandable with the outer periphery and the inner periphery of said cylinder displaced outwardly and inwardly in the radial direction by the pressure of the reservoir fluid (fig. 3);

a flange 16 integrally following one end of said cylinder and having a screw hole (around part 30) connected to said reservoir;

and a screw member 30 screwable into said screw hole; and

wherein said body has a fitting hole for receiving said cylinder, the fitting hole having a larger diameter than that of said drive shaft in an axial position corresponding to said body's outer circumference (fig. 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the coupling and uncoupling means of Falk (US Pat. 4,093,052) on all of the worm bodies within worm gear assembly of Kitagawa (US Pat. 5,188,004) so as allow for general uncoupling and uncoupling of torque transmitting

Art Unit: 3682

elements wherein large changes in temperature fluxuations have less impact on the performance of said elements, as suggested by Falk (US Pat. 4,093,052).

Furthermore, Popov (US Pat. 4,047,449) discloses a worm with teeth formed such that the thickness dimension of said teeth gradually increases in the direction of the rotation axis of a drive shaft.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the worm teeth of Popov (US Pat. 4,047,449) within the worms of Kitagawa (US Pat. 5,188,004) so as to have a successive engagement of the worm with the worm wheel, thereby allowing being capable of transmitting larger torques and possessing a greater kinematic accuracy than conventional worm/worm wheel drives, as suggested by Popov (US Pat. 4,047,449).

FACSIMILE TRANSMISSION

Submission of your response by facsimile transmission is encouraged. Group 3600's facsimile number is **(703) 305-3597**. Recognizing the fact that reducing cycle time in the processing and examination of patent applications will effectively increase a patent's term, it is to your benefit to submit responses by facsimile transmission whenever permissible. Such submission will place the response directly in our examining group's hands and will eliminate Post Office processing and delivery time as well as the PTO's mail room processing and delivery time. For a complete list of correspondence **not** permitted by facsimile transmission, see MEP. 502.01. In general, most responses and/or amendments not requiring a fee, as well as those requiring a fee but charging such fee to a deposit account, can be submitted by facsimile transmission. Responses requiring a fee which applicant is paying by check **should not be** submitting by facsimile transmission separately from the check.

Responses submitted by facsimile transmission should include a Certificate of Transmission (MEP. 512). The following is an example of the format the certification might take:

I hereby certify that this correspondence is being facsimile transmitted to the Patent and Trademark Office (Fax No. (703 872-9306) on _____
(Date)

Art Unit: 3682

Typed or printed name of person signing this certificate:

(Signature)

If your response is submitted by facsimile transmission, you are hereby reminded that the original should be retained as evidence of authenticity (37 CFR 1.4 and MEP. 502.02).

Please do not separately mail the original or another copy unless required by the Patent and Trademark Office. Submission of the original response or a follow-up copy of the response after your response has been transmitted by facsimile will only cause further unnecessary delays in the processing of your application; duplicate responses where fees are charged to a deposit account may result in those fees being charged twice.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Colby Hansen whose telephone number is (703) 305-1036. The examiner can normally be reached on Monday through Thursday and every other Friday from 7:30 PM to 5:00 PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Bucci, can be reached on (703) 308-3668. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-2168.

Colby M. Hansen

Patent Examiner

 6/28/04


DAVID A. BUCCI
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3600